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ABSTRACT

Two groups of freshman students participated in the experiment. They were enrolled in their first ESL writing course. Before instruction, both groups were pre-tested. They wrote an essay. T-test results showed significant differences between both groups in writing ability. The experimental group made too many errors and had many writing problems. Both groups covered the same inclass material, assignments and assessment. In addition, the experimental group used a Blackboard online course from home. Experimental students posted their threads, wrote short paragraphs and posted stories and poems. They located information in sites like "Yahoo Movies" and "webMD." They word-processed their paragraphs and checked their spelling. At the end of the course, both groups were post-tested. They wrote an essay. Analysis of Covariance (ANCOVA) results showed significant differences between both groups. The experimental group made more gains as a result of web-based instruction. They became more proficient, made few errors and could communicate easily and fluently. (Contains 28 references and 3 tables.) (Author)

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Effect of Online Learning on Struggling ESL College Writers

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Abstract

Two groups of freshman students participated in the experiment. They were enrolled in their first ESL writing course. Before instruction, both groups were pre-tested. They wrote an essay. T-test results showed significant differences between both groups in writing ability. The experimental group made too many errors and had many writing problems. Both groups covered the same in-class material, assignments and assessment. In addition, the experimental group used a Blackboard online course from home. Experimental students posted their threads, wrote short paragraphs and posted stories and poems. They located information in sites like "Yahoo Movies" and "webMD". They word-processed their paragraphs and checked their spelling. At the end of the course, both groups were post-tested. They wrote an essay. ANCOVA results showed significant differences between both groups. The experimental group made more gains as a result of web-based instruction. They became more proficient, made few errors and could communicate easily and fluently.

Descriptors: College writing, online learning, Second language learning, writing, web-based instruction, web-based learning.

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Introduction:

Although the number of schools and classrooms using technology in general and distance learning in particular is increasing, many researchers are concerned about the effect educational technology has on student achievement since the effective use of technology requires significant investments in hardware, educational software, infrastructure, staff development, and technical support. Evidence that use of technology in instruction is useful, necessary, and cost-effective is also required. A review of the L1 and L2 writing research on technology and student achievement has shown three contradictory findings. Studies by Meem (1992), Batschelet and Woodson (1991), Cifuentes and Hughey (1998), Chambless and Chambless (1994), Hood (1994), Clark (1996), Grejda and Hannafin (1992), and Jannasch-Pennell, DiGangi, Yu, Andrews and Babb (1999) found that use of word-processing, use of a supplementary program that guides students through the writing process, computer conferencing, computer-based instruction, electronic mail, and World Wide Web page design had no significant differences on the writing quality nor attitudes towards writing between L1 elementary, middle school, secondary and college students who used technology and those who did not.

On the other hand, studies by Jones (1994), Davis and Mahoney (1999), Beyer (1992), Shaver (1986), and Allen and Thompson (1994) found that word processing, participation in a project using a personal computer in the classroom to teach the writing process, using the Writing-Aid and Author's Helper (WANDAH) computer writing system, and using a computer assisted collaborative writing by L1 elementary, middle, high school and college students increased the quantity of writing instruction and the amount of student writing more than those using traditional instruction. The quality of students' writing and their attitudes towards writing on the computer improved as well. Similarly, Pennington (1993), Sullivan and Pratt (1996), Braine (1997) and Liou

(1997) found that the writing skills of ESL students who used word-processing, a computer-mediated networked environment, and web-based materials improved significantly.

Surprisingly, in some ESL classroom settings, traditional instruction was found to be more effective. For example, Izzo (1966) found that technical essays produced by ESP college students in Japan using computer workstations were not as well organized and were significantly shorter than hand-written essays. Results of a study with college students in Taiwan found that face to face discussions that preceded writing activities in a traditional classroom were superior to computer-mediated discussions in producing written comments and explanations of their plans for writing more. Students in the face-to-face group could support and refute each other's arguments better (Huang, 1998).

Given those contradictory findings about the effect of technology on student achievement in the writing skill, it seems that the effect of technology on learning depends on the learning goals set, kinds of tasks and activities involved, kind of technology used, how long it is used, and how it is used. Therefore, the present study attempted to use a variety of instructional technologies consisting mainly of an online (web-based) course, some WWW resources, e-mail and word processing in ESL writing instruction from home, in combination with traditional writing instruction. The primary focus of this study was to find out whether the integration of technology in traditional ESL in-class writing instruction significantly improves the writing skills of less able ESL college learners. The current study tried to answer the following questions: Is there a significant difference between ESL freshman students exposed to a combination of traditional in-class writing instruction and web-based instruction and those exposed to traditional in-class writing instruction only in their writing achievement as measured by the posttest?

Participants:

A total of 113 ESL female freshmen students in two intact classes participated in the present study: 51 students enrolled in the fall 2000 class and 62 students enrolled in the spring 2001 class. The fall class constituted the control group and the spring class constituted the experimental group. The control group was exposed to traditional in-class writing instruction only, whereas the experimental group was exposed to a combination of traditional and online (web-based) writing instruction. Both groups were in their first semester of the translation program at the College of Languages and Translation (COLT), King Saud University, Riyadh, Saudi Arabia and were enrolled in the Writing I course that the author taught for four hours a week. Students in both groups were all Saudi, and were all native speakers of Arabic. Their median age was 18 years, and the range was 17-19. Students in both groups had 6 years of EFL instruction in grades 6-12 prior to their admission to COLT.

The pretest scores indicated that the experimental (online) and control (traditional) groups differed significantly in their writing ability before the writing instruction began ($T = 4.55$, $Df = 111$, $P<.01$). The control group outperformed the experimental group. It was a high-ability group whereas the experimental group was a low-ability group (see Table 1). The typical students in the control group got a score of 70% on the pretest compared to 55% for the experimental group, with more variations existing among students in the experimental group as revealed by their pretest standard deviation and score range.

Table (1)

Distribution of Pretest Scores of Experimental and Control Groups in Percentages

Group	Mean	Median	SD	SE	Range
Experimental	53.06	55	17.33	2.20	10-90

Control	67.45	70	15.98	2.24	30-90

A qualitative analysis of the pretest paragraphs revealed many writing problems that the experimental group had. Experimental students made too many spelling mistakes, did not use punctuation marks at all, could not capitalize words and had difficulty expressing, generating and organizing ideas. They had difficulty putting words together to make a sentence. Many wrote incomprehensible sentences. By contrast, the control group could construct sentences and express ideas. Their spelling ability and knowledge of punctuation marks and capitalization rules was much better.

Instruction:

The experimental and control groups were exposed to the same traditional in-class writing instruction. They studied the same writing textbook assigned by COLT which is "Interactions I: A Writing Process Skills Book, by Segal and Pavlik. The aim of the book is to develop the students' ability to write a cohesive paragraph that has a topic sentence and supporting details with minimal grammatical, spelling, punctuation and indentation errors. The book consists of 12 chapters. Each chapter has a theme and is divided into the following parts: Exploring ideas, building vocabulary, organizing ideas, developing cohesion and style, some grammatical points, writing the first draft, editing practice, writing the second draft and journal writing. In each chapter, tasks and skills are practiced one step at a time, before the students put them all together in their paragraph.

Each chapter was completed over one week, i.e. four class sessions, and the book was covered over 12 weeks. Each week, students in both groups completed all the skills, exercises and writing tasks in the chapter and wrote two one-paragraph essays per week. Students were always

required to do all the exercise and at least write part of their paragraph in class and rewrite their paragraphs when necessary.

Students in both groups were encouraged to write and not to worry about making mistakes. While doing the exercises and writing the paragraphs, students' work was monitored and individual help was provided. The students received communicative feedback focusing on meaning and only errors related to rules or skills under study were highlighted. Feedback was provided on the presence and location of errors but no correct forms were provided. Self-editing and peer-editing were encouraged. Extra credit was given for good paragraphs.

As to assessment, students in both groups were tested every other week. They were given a total of 6 quizzes. On quizzes 1, 3, and 5, the students wrote a paragraph and on quizzes 2, 4, and 6, they completed different tasks similar to those covered in class. Quizzes were always graded, returned to the students with comments on strengths and weaknesses. Words of encouragement were always given. Answers were always discussed in class.

Treatment:

In addition to the traditional in-class writing classroom instruction, the experimental group used an online (web-based) course with Blackboard Corporation that the author developed. The experimental group used their own PC's and the internet from home as it was inaccessible from campus due to wiring difficulties.

Prior to the web-based instruction, students' computer literacy skills were assessed by a questionnaire. A tutorial was given to students. Course components were explained and introduced one at a time. Instructions on how to use certain course components were also posted in the "Announcements" area. Sites were added in the "External Links" according to the specific writing skills and grammatical structures under study in the classroom.

Web-based instruction was initiated by the author posting a welcome note in the "Announcements", by starting a thread on the "Discussion Board" and by sending a group e-card. She continued to do so every now and then throughout the semester. The students responded by similar threads, e-cards and group messages. Then, they took the initiative to post their own threads on the "Discussion Board" on a theme they have studied in the book or any theme of their choice. They responded to the instructor's or another student's thread. They posted the stories and poems that they had read and liked to share with others. They felt free to e-mail each other or e-mail the instructor on any occasion like a student's birthday, religious and national holidays or whenever they needed help. Students checked the links posted in the "External Links". Many students wrote a paragraph about themselves in the "Student Homepage". Some used the "Send File to Instructor" facility to send their assignments to the instructor. They answered the quizzes posted in the "Assessment" area. Only six fill-in-the-blanks quizzes were posted and were used for practice not for course evaluation purposes. The students were also encouraged to use the online course "Resources" which included a weekly lesson and some writing links posted by Blackboard Corporation. Course components such as the "Virtual Chat", "Course Information", "Course Documents", and "Course Assignments" were not used.

In addition to the Blackboard online course, the experimental group located information related to the themes covered in the book from internet sites like "Yahoo Movies", "Yahoo Health", "webMD", and "Encarta". They were also encouraged to word-process the paragraphs they wrote in class and check their spelling at home using MS WORD. Typed paragraphs were posted in class, so that students could read each other's paragraphs.

Throughout the semester, the author served as a facilitator. She provided technical support on word-processing, using the different components of the online course, and responded to individual students' needs, comments and requests for certain sites. The author did not correct

anything that the students posted on the "Discussion Board" nor did she spell-check word-processed paragraphs. Students were given extra credit for using the online course, word-processing their paragraphs and locating information from internet resources. The online course was not assigned a portion of the final course grade. Using the online course was optional as 5 students had no internet access and hence were not part of the experiment.

Procedures:

Before instruction, the experimental and control groups were pre-tested. They took the same pretest that consisted of an essay. Test instructions specified the essay length and essay component related to the tasks and skills to be practiced in the book.

At the end of the experiment, the experimental group answered a post-treatment questionnaire that aimed at finding out how the students felt about the online instruction and whether they found it helpful.

At the end of the course, both groups were post-tested. They took the same posttest that was part of a three-hour final exam. The posttest consisted of an essay that the students had never seen nor practiced in class or in the online course. The essay topic was concrete and within the students' background knowledge. The test instructions specified the essay length and essay components that were taught and practiced during the course such topic sentence, types and number of supporting ideas, use of capitalization, punctuation, spelling, conjunctions and cohesive ties...etc. Moreover, the final exam contained a letter-writing task and four objective questions covering all the writing tasks practiced over the semester.

The pretest and post-test essays of both groups were holistically graded based on a general impression of content, organization, cohesion, word choice, language use and mechanics. All essays

were read once and a quality rating of high, above average, average, below average and low was given to each paper. Essays were then read for a second time and each was assigned a grade.

Test Validity and Reliability

The posttest is believed to have content validity as it aimed at assessing the students' ability to develop a cohesive paragraph that has a topic sentence and supporting details with minimal grammatical, spelling, punctuation and indentation errors. The topic was based on a novel situation and was not a reproduction of the material presented in the textbook or classroom. The essay components and writing tasks required in the posttest were comparable to those covered in the book and practiced in class. The test instructions were phrased clearly and the examinee's task was defined. The minimum and maximum essay length was specified (10-15 lines) and the number of supporting details was specified as well. 95% of the experimental and control students comprehended the essay topic and writing tasks and responded to the topic as instructed.

Concurrent validity of the posttest was also determined by establishing the relationship between the students' scores on the posttest and their writing course grade. The validity coefficient was .84 for the experimental group and .87 for the control group. Concurrent validity was also determined by establishing the relationship between the students' scores on the posttest and their scores on the last essay quiz that was administered 4 weeks prior to the administration of the posttest. The validity coefficient was .67 for the experimental and .70 for control groups.

To estimate inter-rater reliability, a 30% random sample of the pretest and posttest essays was selected and double-scored. A colleague who taught Writing I to freshman students before scored the pretest and posttest essay samples holistically. She followed the same scoring procedures utilized by the author. The marks given by both raters for each essay in the sample were correlated. Inter-rater correlation was 89% for each groups.

In addition to inter-rater reliability, examinee reliability was computed as it indicates how consistently examinees perform on the same set of tasks. Examinee reliability was calculated by correlating the students' scores on the posttest with their scores on another essay-type subtest that was administered at the same time as the post-test. The post-test was part of the final exam that consisted of several objective and essay-type questions. On another question, the students were asked to write a letter. Reliability of the posttest scores was computed using student scores on both subtests (essay and letter). The Kuder-Richardson formula 20 for essay tests was used. The examinee reliability coefficient was .77 for the experimental group and .88 for control groups.

Data Analysis:

All pretest and post-test raw scores were converted into percentages. The mean median, standard deviation, standard error and range were computed for the pretest and posttest scores of both groups. To find out whether there is a significant difference in ability between the experimental and control groups prior to instruction, a T-test was run using the pretest scores. Results are reported in the Participants section above.

Since difference in the writing ability existed between the experimental and control groups prior to the experiment, and the two groups were intact and unequal in size, Analysis of Covariance (ANCOVA) was run using the posttest scores as the response variable and the pretest scores as the covariate to correct for chance differences that existed when the subjects were assigned to treatment groups. This correction will result in the adjustment of group means for pre-existing differences caused by sampling error and reduction of the size of the error variance of the analysis.

Finally, to find out whether each group has made any progress (gain) as a result of the writing instruction, a within group paired T-test was computed for each group to find out whether there is a significant difference between the pretest and posttest mean scores of each group.

Results:

Table (2) shows that the typical ESL freshman student in the experimental group scored higher than the typical student in the control group (medians = 85% and 77% respectively) with less variations existing among students in the experimental group (SD=14.7) than the controls (SD=17.11).

Table (2)

Distribution of Post-test Raw Scores of the Experimental and Control Groups in Percentages

Group	Mean	Median	SD	SE	Range
Experimental	79.94	85	14.70	1.87	50-100
Control	74.75	77	17.11	2.41	30-100

Results of the paired T-test reported in Table (3) show a significant difference between the pre-test and post-test mean scores of the experimental group at the .01 level, suggesting that student achievement in the experimental group has significantly improved as a result of using a combination of web-based writing instruction and traditional in-class writing instruction (T=12.14, Df=61). Similarly, a significant difference between the pretest and post-test mean scores of the control group was found at the .01 level, suggesting that achievement in the control group has significantly improved as a result of the traditional in-class writing instruction (T=4.6, Df=50).

Table (3)

Results of the T-test for posttest and pretest mean scores of Experimental and control Groups

Group	T	Df	Mean difference	SD Difference	P
Experimental	12.14*	61	26.87	17.42	.01
control	4.6*	50	7.29	11.32	.01

However, T-test results alone do not show which group has made higher gains. After adjusting for initial group differences on the pretests, Analysis of Covariance (ANCOVA) on adjusted post-test means revealed significant differences between the experimental and control groups ($F=29.84$, $P<.0001$). The experimental group has made higher gains in writing achievement than the experimental group as a result of web-based instruction. The effect size, i.e. degree of superiority of the experimental treatment over the control treatment was .55.

Discussion:

The present study found that students in the experimental group who were taught using a combination of web-based writing instruction and traditional in-class writing instruction scored significantly higher than controls who were taught using traditional in-class writing instruction only. Use of web-based instruction as a supplement to traditional in-class writing instruction was significantly more effective than using traditional writing instruction alone. Web-based instruction seems to be an important factor in enhancing the writing quality of less able ESL students. It helped enhance their writing ability (achievement) and resulted in a significant improvement in their post-test (achievement test) scores.

Qualitative analysis of the posttest essays showed that members of the experimental group exhibited a great improvement in their writing ability. They became more competent, could write fluently and communicate easily. They could write long essays, long sentences and more compound and complex structures instead of short and simple sentences at the beginning of the semester.

There was a significant decrease in spelling, punctuation and capitalization errors. Only 10% of the students failed the course as opposed to 30% of the controls.

Furthermore, students' responses to the post-treatment questionnaire indicated that the online course had a positive effect on their attitude towards the writing process. It enhanced their self-esteem, motivation and sense of achievement and improvement. The students enjoyed writing and were motivated to write. Online learning encouraged writing and exchange of ideas. The amount of student writing increased in an environment secure for making mistakes. According to the usage statistics provided by Blackboard Corporation, the students made 4079 hits over a period of 10 weeks. Student-student and student-instructor interactions increased. Achievement was enhanced by the multiple skills practiced: writing, reading, spell checking and word-processing, and by the variety of innovative technologies utilized: the online course, WWW resources, e-mail and word-processing.

The effect of online instruction on the writing achievement of less able ESL freshman writers obtained in the present study is consistent with findings of other studies conducted with learning disabled or remedial writers in the L1 and L2 literature. Lewis (1998) conducted a study with learning disabled students in grades 4-12 who used word processing tools (spelling and grammar aids). She found that word processing had the most impact upon the writing accuracy of learning disabled students. Spell checks were found to be effective editing tools but grammar checks were not. Spell checks had a more positive effect on students' writing quality and accuracy than synthesized speech. In another study, Wresch (1993) found that use of a writing process software has improved disadvantaged college students' writing performance and pass rates. Furthermore, Spaulding and lake (1991) found that freshmen remedial writers who used a set of networked computers to assist them in their writing lessons interacted freely and comfortably with their teachers and peers and thus opportunities to learn and grow increased. Finally, Jacoby (1993)

found that secondary limited English proficient students who used a word processing program and were encouraged to use the computer independently acquired word processing skills and learned to use the computer for daily written assignments for regular classes.

The positive effect of web-based instruction on the attitudes of less able ESL students in the present study is also supported by findings of other studies. For example, Huang (1999) found that the EFL college students using internet-related assignments had positive attitudes towards use of the internet in writing instruction. In addition, Richards (1996) surveyed teachers, library media specialists and students in grades K-12 and found that the internet is a great motivational tool for students. Moreover, Shields (1991) used an 8-week practicum that aimed at improving use of Standard English and attitude towards writing of students in grades 6-8. Assessment of students' stories showed that they had improved their use of Standard English and the post treatment questionnaire indicated that students enjoyed writing the stories and felt more positive about the writing process.

Despite the positive attitudes that experimental students had towards writing as a result of their web-based writing experience, the author had always to prompt the students to use the course site by sending a group e-mail and by responding to and commenting on students' ideas. The minimum requirements of students' contributions in online course should be specified. A percentage of the course grade should be also assigned to using the online course in order for the students to take it more seriously.

Recommendations:

In the present study, web-based writing instruction was found to be a powerful tool for less able ESL freshman students. The benefits of introducing web-based learning in writing classrooms seem to be great for less able, less proficient and remedial students. Online instruction was found to

be effective in improving student-writing skills. Improvement was noted in the computer generated and handwritten assignments. Differences in length, neatness, mechanical correctness and style were observed. Results also showed that in learning environments where technology is unavailable to ESL students and instructors, use of technology from home and even as a supplement to traditional classroom techniques helps motivate and enhance less able ESL students' writing skills. Therefore, use of web-based writing instruction to improve the writing skills of poor ESL students at COLT is strongly recommended. It is also recommended that EFL instructors at COLT be trained to use the internet and online instruction in teaching ESL to students from home as it requires no equipment and connectivity from campus and no scheduling. In Addition, use of web-based instruction should be extended to students in other levels and to other ESL courses and skills taught at COLT such as speaking, listening, reading, spelling, grammar, vocabulary building and dictionary skills. It is also recommended that other researchers and instructors fully deliver whole writing courses and other ESL language courses online. The effect of fully delivered online language courses on less able ESL student achievement is still open for further investigation.

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